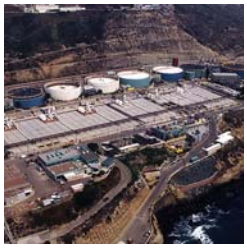
Metropolitan Wastewater


Mission Statement

To provide the public with a safe and efficient regional sewerage system that protects our ocean water quality, supplements our limited water supply, and meets federal standards, at the lowest possible cost.

Overview of Services/Programs

The City of San Diego's Metropolitan Wastewater Department (MWWD) provides regional wastewater treatment and disposal service for two million people living and working in 16 local cities and districts. This 450 square mile area is defined by Del Mar to the north, Alpine and Lakeside to the east, and our communities bordering Mexico to the south. MWWD manages all the resources needed to operate and maintain the Metropolitan Sewerage System as well as provides for appropriate new infrastructure capacity to accommodate regional growth and economic vitality while protecting water quality.

As a vital component of MWWD, the Wastewater Collection Division collects and conveys wastewater from homes and businesses in the City of San Diego through approximately 3,000 miles of pipeline. MWWD operates 85 pump stations and 4 treatment plants. The Point Loma Wastewater Treatment Plant, managed by the Operations and Maintenance Division, receives transported wastewater and provides advanced primary treatment for 190 million gallons of wastewater per day. Organic solids resulting from the treatment process are piped to the Metropolitan Biosolids Center adjacent to the Miramar Landfill where they undergo further processing. In addition, the North City Water Reclamation Plant treats sewage and produces water that is used for non-potable purposes such as irrigation, thus supplementing the region's scarce water supply. The South Bay Water Reclamation Plant is scheduled to become operational in Fiscal Year 2002.

The Environmental Monitoring and Technical Services Division (EM&TS) carries out several crucial programs in support of the treatment and disposal of wastewater. These include the Industrial Wastewater Control Program that regulates industrial discharges to the sewers, thereby preventing toxic substances from passing into the ocean, interfering with treatment processes, or contaminating the biosolids that result from treatment processes. Additionally, EM&TS operates a comprehensive ocean monitoring program to evaluate the effects of discharge into the Pacific Ocean from the City's wastewater treatment plant at Point Loma. It provides laboratory testing for process control and regulatory reporting purposes, and it insures compliance with all regulatory permits and oversees actions necessary to maintain the modified permit for Point Loma. MWWD supports all the Mayor's Goals, and has especially focused efforts to accomplish Goal #4, *Clean-up our beaches and bays*, and Goal #9, *Pursue energy independence*. These efforts are highlighted in the following summaries.

Major Accomplishments/Service Efforts

- **State Revolving Fund (SRF) Loans**
  Through Fiscal Year 2001, the Metropolitan Wastewater Department has received $72,776,496 in SRF Loan funds from the State Water Resources Control Board. By the end of Fiscal Year 2002, it is estimated that MWWD will receive an additional $7,473,266 in loan funds. There is also $30,174,074 in pending loans which should be awarded in Fiscal Year 2002. These loans offer a significant reduction in the cost of borrowing, reducing the effective interest rate from approximately 5.25 percent to 2.5 percent. This interest rate reduction projected over a twenty year period will result in savings to the ratepayers of millions of dollars in financing costs for major construction projects.

The following relate to the Mayor's Goal #4, *Clean up our beaches and bays.*

- **Reduced Sewer Spills**
  The Metropolitan Wastewater Department continues to work hard to limit sewer spills. Total spills in the approximately 3,000 miles of the Wastewater Collection System were reduced from 342 in Fiscal Year 2000 to 316 in Fiscal Year 2001. Additional resources have been identified to increase preventative maintenance and to replace/rehabilitate this key infrastructure.

- **Association of Metropolitan Sewerage Agencies (AMSA) Gold Award**
  AMSA presented the Point Loma Wastewater Treatment Plant and the North City Water Reclamation Plant with its Gold Award for another year of full compliance with environmental permits.

- **International Cooperation**
  The Metropolitan Wastewater Department has established and expanded cooperative efforts with the City of Tijuana, Mexico in the areas of wastewater pretreatment, monitoring, engineering, and pipeline repairs. MWWD employees provide hands-on assistance with some of Tijuana's most critical sewerage maintenance problems. San Diego's Metropolitan Wastewater Department also shares business "best practices" that could benefit Tijuana. Through this ongoing partnership, Tijuana and San Diego should realize significant reductions in environmental impacts to the Tijuana River Valley and coastal border waters.

The following relate to the Mayor's Goal #9, *Pursue energy independence*.

- **Point Loma Wastewater Treatment Plant Hydroelectric Facility**
  On June 13, 2001 the City began operating a new facility designed to produce an additional 1.35 megawatts of renewable energy for sale to the local electric grid. The power comes from a hydroelectric turbine at the City's Point Loma Wastewater Treatment Plant. The power is produced by utilizing the potential energy in the 100-foot elevation drop between the effluent channel and the Point Loma Ocean Outfall when flow is diverted through the hydroelectric facility. The 1.35 megawatts produced is enough power for approximately 1,000 homes. This project was partially funded by a $360,000 grant from the California Energy Commission. The City will also receive up to an additional $420,000 from the state in renewable energy incentives over the next five years.

- **Central Control of MWWD Emergency Generators**
  The Metropolitan Wastewater Department is a participant in SDG&E's Rolling Blackout Reduction Program. On request from SDG&E, when a rolling blackout is anticipated, certain facility and sewer pump station electric loads will be transferred remotely to their respective emergency generators. On May 20, 2001, MWWD completed a project to remotely control 10 existing emergency generators located at the Point Loma Wastewater Treatment Plant, the Metro Operations Center and eight sewer pump stations. The operators at MWWD's Central Operations and Management Center, located in Kearny Mesa, can remotely start and stop these generators from the operator control console. This has the effect of removing those

facilities from the power grid, thereby freeing up a total of 2.5 megawatts of energy for other users. This project was implemented in less than six months and received a $486,000 grant from the California Energy Commission.

- **Energy Efficiency Program**
  Even before the dramatic increase in electrical rates last summer, MWWD had made a commitment to reduce power consumption, conserve natural resources, and pass along savings to ratepayers. An example of this is "cogeneration." At the Point Loma Wastewater Treatment Plant, an on-site Gas Utilization Facility (GUF) converts methane produced during the treatment process into electrical and thermal energy. Using this energy, the Point Loma facility has become energy self-sufficient. Prices for electrical energy remained significantly higher through Fiscal Year 2001 than those experienced before the last quarter of Fiscal Year 2000. System-wide energy costs averaged $110 per megawatt hour with the low cost cogeneration facilities figured-in during Fiscal Year 2001. Without the cogeneration facilities in the calculation, averages reached $146 per megawatt hour. Cogeneration facility costs per megawatt hour were $62 for Pt. Loma, $49 for the North City Water Reclamation Plant, (NCWRP), and $45 for the Metro Biosolids Center (MBC). Given the lower cost and the amount of energy consumed by these facilities, in Fiscal Year 2001 cogeneration saved $1,769,072 at Pt. Loma, $3,357,208 at NCWRP and $2,682,832 at MBC. Total sales revenues and avoided costs realized from cogeneration resulted in a $9,309,059 savings for the ratepayers' benefit.

Special Programs

- **Phase Funding**
  Phase funding is a process in which the funding for a specific contract is appropriated in phases based on scope and schedule. Phase funding has allowed the department to better manage its cash flow in the Sewer Revenue Fund.

- **Owner Controlled Insurance Program (OCIP)**
  An OCIP is a comprehensive managed risk program in which the owner provides the insurance coverage for all project participants while in the course of construction. MWWD's OCIP provided Workers' Compensation, Builder's Risk, General Liability and Excess Liability insurance. Because planned construction activity has declined as major facilities have been completed, OCIP is no longer cost-beneficial and is being phased out for Workers' Compensation and General Liability insurance. Contractors will now purchase their own policies with reimbursement from MWWD.

- **Pay-for-Performance**
  MWWD is the first department in the City to have developed and implemented a Pay-for-Performance Program. In 1997, the department piloted this program to both align group incentives with organizational goals and as a competitive strategy in anticipation of the City's Optimization Program. The Pay-for-Performance Program is designed to utilize incentive pay to motivate performance, creativity and teamwork in order to increase productivity. The program is self-funded in that performance bonuses are paid only to the extent that there are savings from the approved budget. One half of the savings is returned to the Ratepayer Sewer Enterprise Fund while the other half is available to fund

employee incentives. Individual employee bonuses are capped at $1,000 (net of taxes) per year.

- **Value Engineering**
  Since its inception in 1991, the Value Engineering Program conducted by MWWD has achieved savings of over $100 for every dollar spent. During Calendar Year 2001, two Value Engineering workshops were held and recommendations were made for savings of between $3 and $14 million. The recommendations are currently under review.

The following relate to the Mayor's Goal #4, *Clean up our beaches and bays.*

- **Centralized Operations Management Network (COMNET) System**
  COMNET is a distributed instrumentation, control, and data communications system which integrates monitoring and control of the treatment, storage, metering and pumping facilities in the greater San Diego Metropolitan Sewerage System network. Ultimately, more than 100 site locations will be linked and monitored by the system. The COMNET will provide the ability to monitor and control the flows and treatment processes of these facilities from a central control and information center. In Fiscal Year 2001, additional monitoring capacity was added to the system, including electronic monitoring of smaller pump stations, sewer interceptor alarms, and flow metering alarms, all of which promote greater responsiveness and reliability in the system.

- **Flow Monitoring Alarm System**
  In September 2000, the Metropolitan Sewerage System's Flow Metering Alarm System became operational. This computerized system utilizes 98 meters that monitor wastewater flow conditions in major sewer lines that may be indicative of a significant sewer overflow or potential spill. A warning is then sent by telephone line to MWWD's Central Operations Management Center. MWWD is the first agency in the nation to install this state-of-the-art alarm system to help prevent or minimize the impact of spills.

- **Environmental Monitoring and Technical Services (EM&TS)**
  Due to the highly competent and cost effective nature of the scientific work done by Environmental Monitoring and Technical Services, the division's services have been sought by outside agencies. EM&TS conducts such work on a cost-reimbursable basis. Currently, for example, the division conducts the Ocean Monitoring Program for the International Wastewater Treatment Plant under contract with the U.S. International Boundary and Water Commission. EM&TS has also provided contract services to the U.S. Environmental Protection Agency for beach water quality studies.

- **Industrial Wastewater Control Program**
  One of the ways that MWWD maintains the quality of the marine environment and protects our sewerage system is by regulating the quality of the wastewater that enters the sewers. The Industrial Wastewater Control Program issues discharge permits, performs inspections, conducts wastewater monitoring, and enforces sewer discharge standards at businesses and industries throughout the entire Metropolitan Sewerage System service area. The decline of pollutants in the sewer system over

recent years, meeting strict California State Ocean Plan requirements, and the reduction of heavy metal discharges all demonstrate the success of the Industrial Wastewater Control Program.

- **Accelerated Municipal Capital Improvement Program**
  The Wastewater Collection System consists of almost 3,000 miles of pipelines. Eight hundred to 1,000 miles are over 50 years old and many of the pipelines are in a deteriorated condition. This is a significant cause of sewer spills. The City has initiated a televising assessment program for 1,000 miles of the pipeline and is ramping up the pipeline replacement and rehabilitation program from 15 to 20 miles per year to 60 miles per year by Calendar Year 2004.

- **Comprehensive Sewer Pipeline Cleaning Program**
  In the past several years, the City has been utilizing limited available resources to concentrate regular cleaning cycles on the oldest and most deteriorated half of its almost 3,000 miles of sewer pipelines. However, the City recently initiated a special program to increase available resources and clean the entire system by March 2004.

- **Food Establishment Wastewater Discharge (FEWD) Program**
  The FEWD Program works with food preparation businesses to eliminate the disposal of cooking grease into the sewers. Grease was responsible for approximately 22 percent of all sewer spills in Fiscal Year 2001. Businesses are inspected and permitted to insure that appropriately sized grease traps or interceptors are properly installed and maintained.

- **Grease Education Program**
  Cooking grease is one of the primary causes of residential pipeline and sewer main blockages that result in sewage spills. To address this problem, MWWD has instituted an aggressive public education program to help eliminate oils and grease from the residential sewage flow. This includes school-based study programs, community outreach, public seminars, and environmental fairs throughout the City of San Diego.

- **Canyon Access Program**
  Wastewater Collection Division is working with stakeholder communities to develop a Canyon Access Program that will give the City much needed access to maintain and repair sewer mains in urban canyons. A core objective of this program is to minimize aesthetic and environmental impacts while enabling routine maintenance of sewer mains. The Wastewater Collection Division is implementing a number of Non-Right-of-Way activities. The Canyon Interim Program is focused on the maintenance and repair of sewer mains in over 60 Non-Right-of-Way areas. At the present time, there are five completed areas and three in progress. There are new operational procedures in place for the Significant Rain Event Inspection Program. The program provides immediate inspection of identified canyon areas following significant rainfall events. The recently initiated Volunteer Canyon Watch Program provides additional “eyes” in remote areas.

Future Outlook

- **Strategic Business Plan**
  The Metropolitan Wastewater Department's Strategic Business Plan goal is to insure that our ratepayers and other key stakeholders receive the most effective wastewater services possible. The plan is a 10 year integrated projection of business goals and objectives covering all aspects of infrastructure planning, financing, operations and maintenance, customer service and employee team building. Strategies are developed and reviewed each year in the context of supporting goals of the Mayor and Council, and the department's stated vision and mission.

The following relate to the Mayor's Goal #4, *Clean up our beaches and bays.*

- **Increased Capacity for South Bay Water Reclamation Plant (SBWRP)**
  Originally, the South Bay Water Reclamation Plant (SBWRP) was planned to reclaim seven million gallons per day (mgd). With City Council approval, the SBWRP was expanded to 15 mgd. This expansion alleviated the need for a Mission Valley Water Reclamation Plant, a project budgeted for $105.5 million. Also, by expanding the SBWRP now rather than building additional capacity later, MWWD estimates savings of $5 million. The South Bay Water Reclamation Plant is completing construction and is slated to begin operation during Fiscal Year 2002.

- **Increased Use of Reclaimed Water**
  The full operation of the 30 mgd North City Water Reclamation Plant and the completion of construction of the 15 mgd South Bay Water Reclamation Plant, make the opportunities for maximizing the beneficial reuse of reclaimed water significant. MWWD is working closely with the Water Department to support their efforts in marketing reclaimed water.

- **International Cooperation**
  The ongoing partnership between San Diego and Tijuana, Mexico to enhance the collection and treatment of the region's wastewater and to reduce environmental impacts will continue. As part of this collaborative effort, the increasing regional benefits include the potential sale of reclaimed water and the continuing agreement for the use of the emergency connection.

- **Canyon Access Program**
  An Aerial Remote Sensing Pilot Project will provide real time Thermal Imagery and Aerial Videography to detect sewage spills. This pilot project is scheduled for imlementation in Fiscal Year 2002. The Collection Overflow Prevention System (COPS) is an additional pilot project to detect sewer spills by installing battery-powered sensors in manholes located in remote areas. The program is scheduled for completion in Fiscal Year 2002.

  A Mobile Data Unit (MDU) Field Project has been designed to collect and manage data from the various canyon inspection and maintenance activities. The initial phase of the MDU project is scheduled for implementation during Fiscal Year 2002.

Staffing and Expenditure History

Metropolitan Wastewater Expenditures

	FY 2000 Actual	FY 2001 Actuals[1]	FY 2002 Budget
Information and Organizational Support [2]	$2,431,765	$6,828,631	$7,680,273
Engineering and Program Management	$5,088,203	$5,306,989	$8,928,811
Services & Contracts	$83,187,183	$108,130,688	$142,399,800
Operations & Maintenance	$70,525,568	$75,867,510	$82,923,021
Wastewater Collection	$56,771,550	$38,378,638	$36,103,121
Environmental Monitoring & Technical Services	$14,576,615	$16,109,490	$17,846,029
Capital Improvement Program	$189,670,084	$141,180,477	$113,712,803
TOTAL	**$422,250,968[3]**	**$391,802,423[4]**	**$409,593,858[5]**
Percent Change from Prior Year		**-7.21%**	**4.54%**

[1] In FY 2001, the department's debt services, reserves, right-of-way fee, and contractual services were transferred to the Services and Contracts Division from the Operations and Maintenance and Wastewater Collection Divisions. The "Information Technology Management" Program was transferred from the Services and Contracts Division to the Information and Organizational Support Division.
[2] Formerly known as the Administration Division.
[3] FY 2000 operating actuals do not include $2.2 million in services billed to capital improvement projects.
[4] FY 2001 operating estimates based upon Organizational Financial Status Report data as of Period 13 (6/30/01) and do not include $2.8 million in services billed to capital improvement projects. CIP data based upon Annual Financial Report Schedule F-2.
[5] FY 2002 Final Operating Budget includes $22.2 million in Contingency Reserves.

Metropolitan Wastewater Budgeted Positions/FTE

	FY 2000 Actual	FY 2001 Actual	FY 2002 Budget
Information and Organizational Support [1]	21.60	40.58	47.72
Engineering and Program Management [2]	36.00	32.00	66.00
Services & Contracts	76.00	65.00	67.00
Operations & Maintenance [3]	315.00	343.50	347.00
Wastewater Collections [2]	238.00	238.00	249.00
Environmental Monitoring & Technical Services	150.00	158.00	158.00
Capital Improvements Program	47.00	45.00	40.00
TOTAL	**883.60**	**922.08**	**974.72**
Percent Change from Prior Year		**4.35%**	**5.71%**

[1] Formerly known as the Administration Division. In FY 2001, the "Information Technology Management" activity group was transferred to this division from Services and Contracts Division.
[2] In FY 2002, the Eng. & Program Management and Wastewater Collection Divisions increased staffing for the Accelerated Pipeline Replacement and Rehabilitation Program.
[3] In FY 2001, the Operations and Maintenance Division increased staffing for the new South Bay Water Reclamation Plant.

Performance Measures

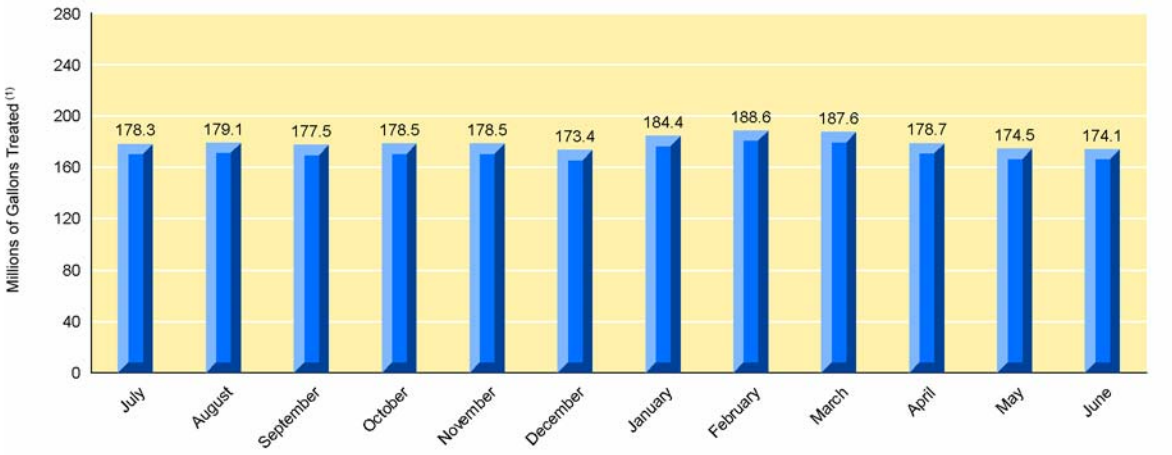
Provide the public with a safe and efficient regional sewage system that protects our ocean water quality, supplements our limited water supply, and meets federal standards, at the lowest possible cost.

	FY 2000 Actual	FY 2001 Actual	FY 2002 Budget
Millions of Gallons per Day Sewage Treated (mgd)[1]	179.950	179.40	180.00
Biosolids Dry Tons Processed	35,152	38,434	40,000
Feet of Sewer Main Televised	438,656	738,951	1,750,000
Feet of Sewer Main Root Elimination Treatment (City & Contractor)	625,308	537,088	723,556
Feet of Sewer Main Cleaned	8,555,449	9,156,957	10,300,000

[1] As in prior years, data includes Pt. Loma Wastewater Treatment Plant and Hale Ave. Resource Recovery Facility, Escondido; it excludes North City Water Reclamation Plant and San Pasqual Water Reclamation Plant, to avoid a double count of double treated sewage at Point Loma and Escondido.

In Fiscal Year 2001, a monthly average of 179.4 mgd (million gallons per day) of sewage was treated; and over 16,000 ocean monitoring samples taken from nearby ocean outfalls were tested to insure environmental protection.

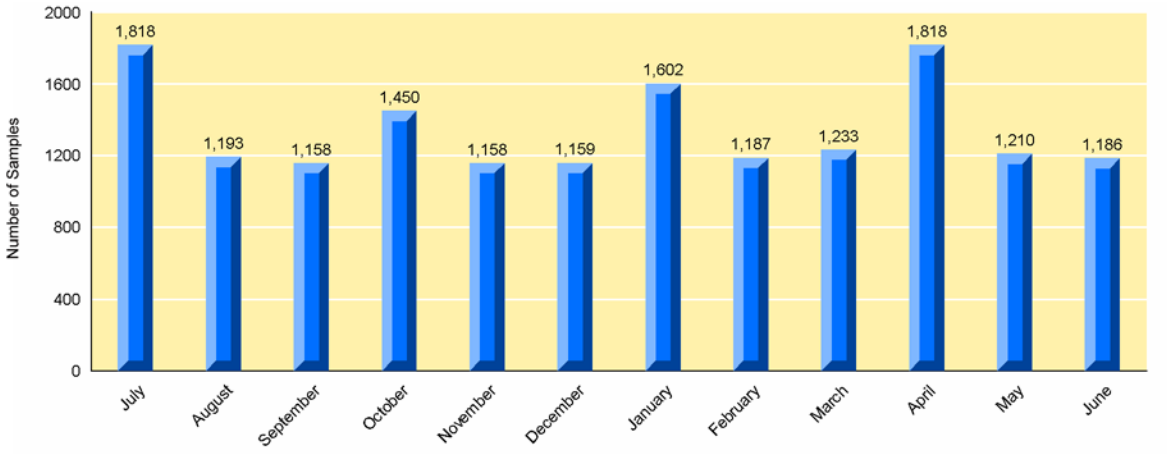
SEWAGE TREATED



Goal: Treat all regional sewage at or better than Federal and State standards. Provide sufficient capacity to meet growth and emergency requirements.
Percent of Time Met: Goal was met 100% of the time. All permitted wastewater treatment standards associated with the Environmental Protection Agency and the State Water Resources Control Board were met for the seventh consecutive year.

(1) As in prior years, data includes Pt. Loma Wastewater Treatment Plant and Hale Ave. Resource Recovery Facility, Escondido; it excludes North City Water Reclamation Plant and San Pasqual Water Reclamation Plant, to avoid a double count of double treated sewage at Point Loma and Escondido.

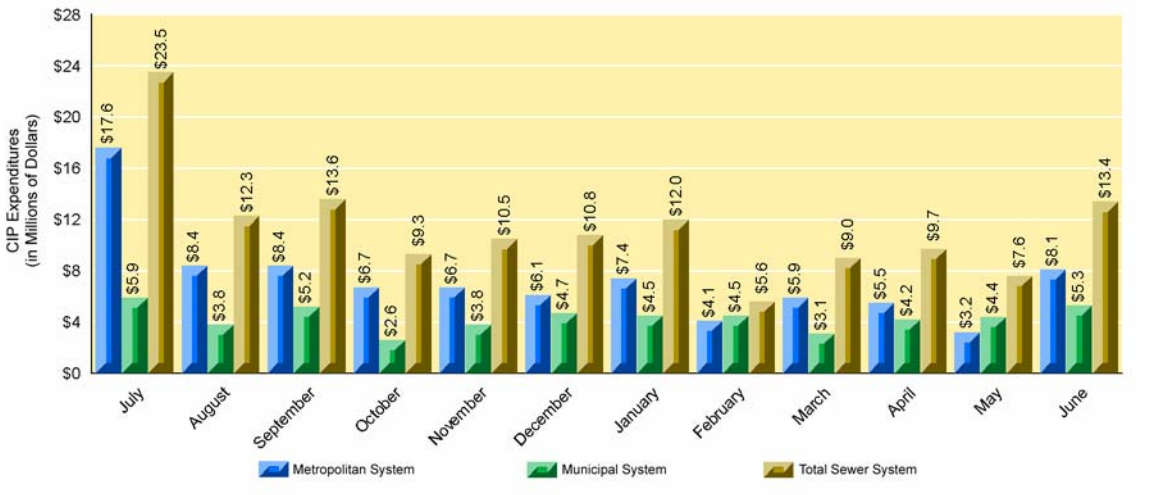
OCEAN MONITORING PROGRAM



Goal: Monitor nearby ocean water quality to insure protection of this key environmental resource for the City and region in areas related to deep ocean discharge of treated wastewater.
Percent of Time Met: Continuing high level of monitoring maintained in vicinity of Point Loma and South Bay Ocean Outfalls.

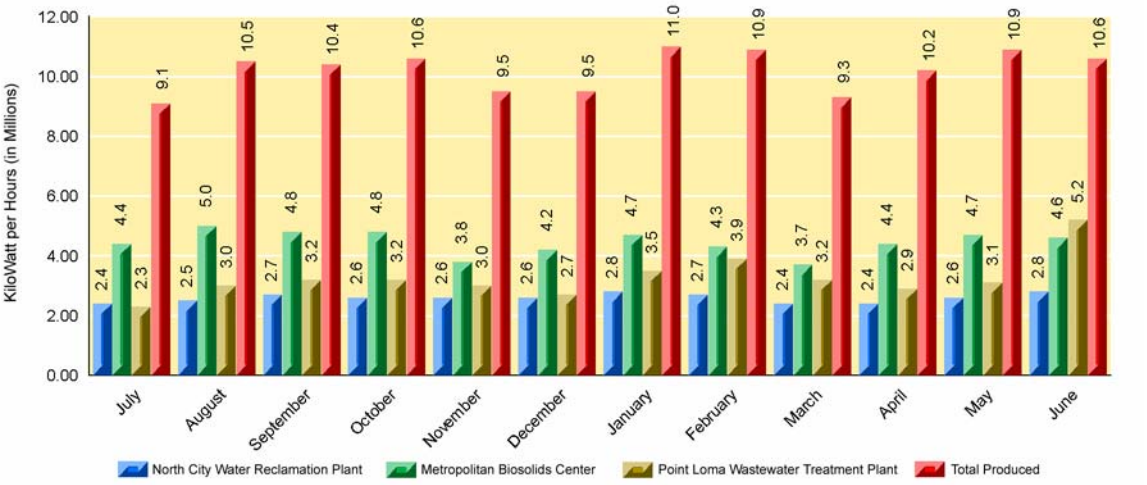
In Fiscal Year 2001, the Capital Improvement Program (CIP) expended over $140.2 million to expand, repair and replace the City's Sewerage System. Over 131.6 million total kilowatt hours of energy were produced using wastewater treatment processes and site locations, thereby, reducing the purchase of energy.

SEWER SYSTEM CIP EXPENDITURE



Goal: Provide wastewater collection, treatment and reuse/disposal facilities, which meet current and future needs with regard to capacity, safety, reliability, effectiveness and efficiency.
Percent of Time Met: All mandated and planned new construction and rehabilitation milestones were met.

COGENERATION POWER PRODUCED

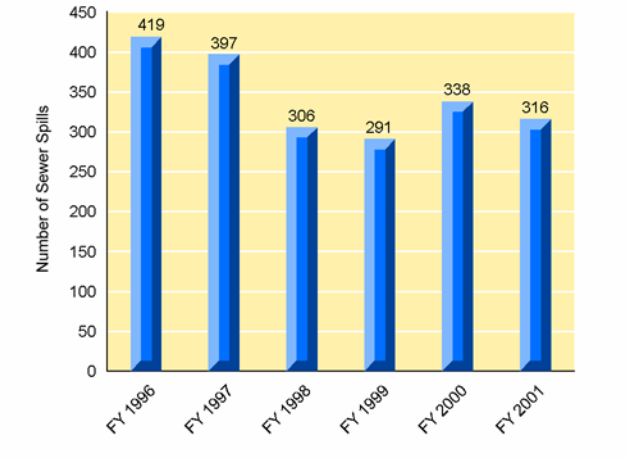


Goal: Utilize wastewater treatment processes and locations to additionally produce energy, thus increasing productivity associated with the City's wastewater treatment operations.
Percent of Time Met: Cogeneration has been designed, constructed and put into operation at the following three facilities: North City Water Reclamation Plant, Metropolitan Biosolids Center, and Point Loma Wastewater Treatment Plant.

There were 316 sewer spills in Fiscal Year 2001. This is a 6 percent decrease compared to the total number of spills that occurred in Fiscal Year 2000. There were 42 sewer spills that reached public waters in Fiscal Year 2001; this is a 24 percent increase from Fiscal Year 2000.

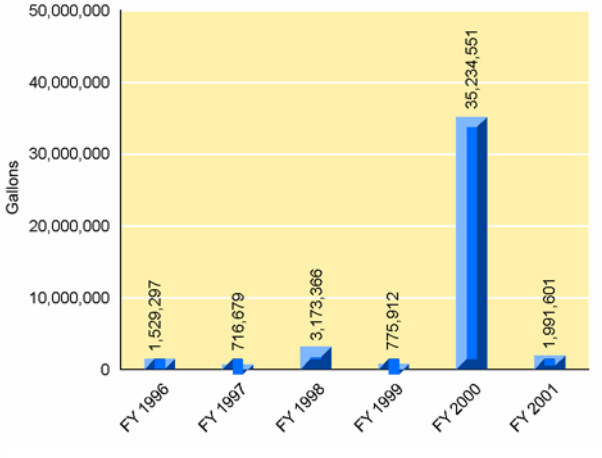
NUMBER OF SEWER SPILLS

FY 1996 - 2001



TOTAL VOLUME OF SEWER SPILLS

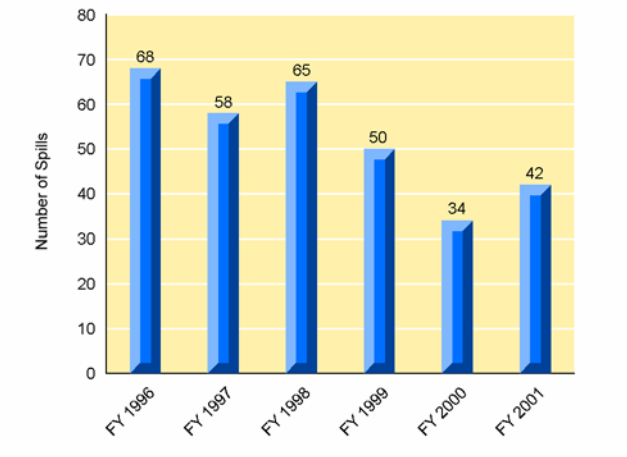
FY 1996 - 2001[1]



[1]Higher spill volume in Fiscal Year 2000 is due to 34 million gallons on spills

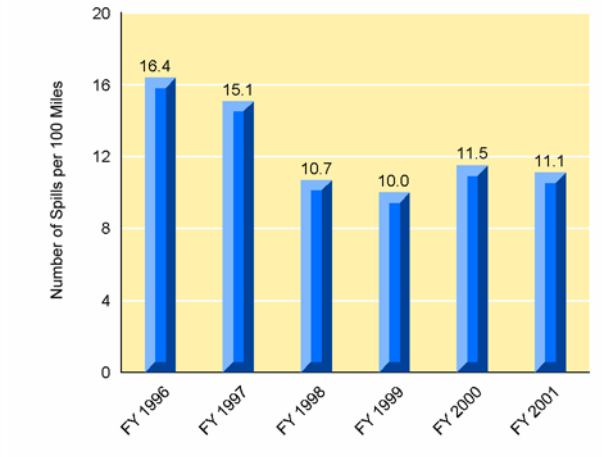
NUMBER OF SEWER SPILLS TO ENTER PUBLIC WATER

FY 1996 - 2001



NUMBER OF SEWER SPILLS PER 100 MILES OF SEWER MAIN

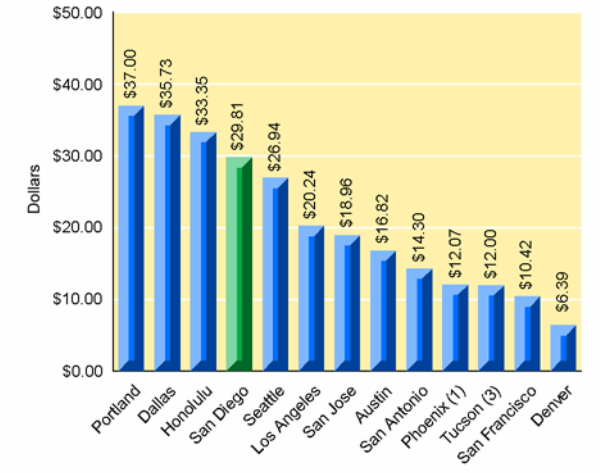
FY 1996 - 2001



Comparison to Other Jurisdictions

AVERAGE MONTHLY RESIDENTIAL SEWER BILL

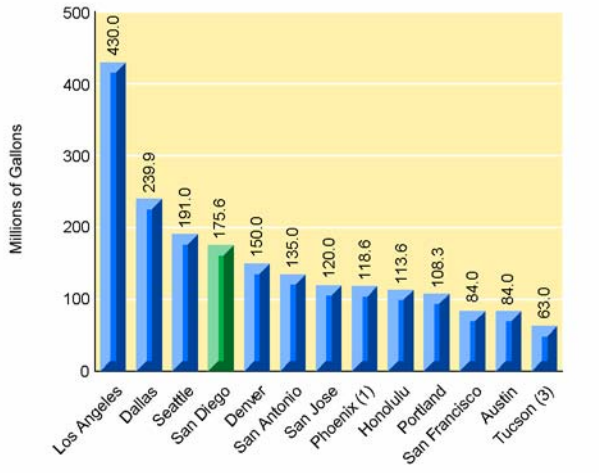
FY 2001



NOTE: Certain jurisdictions charge part of the fee for sewerage service on property tax bills or regional agency bills.

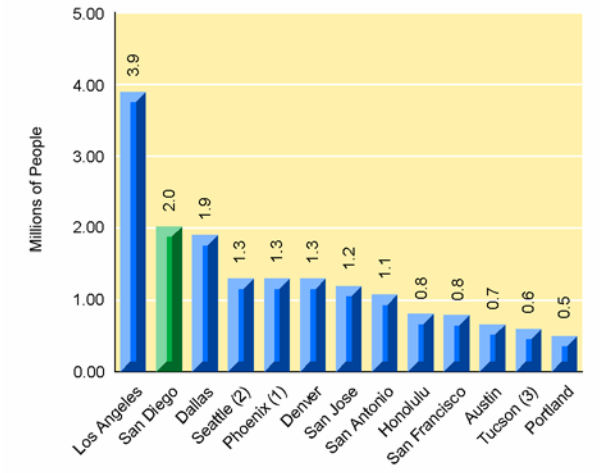
MILLIONS OF GALLONS OF SEWAGE TREATED PER DAY

FY 2001



POPULATIONS OF CITIES COMPARED

FY 2001



(1) City of Phoenix data only.
(2) Kings County provides the wastewater treatment.
(3) Outlying communities are included in sewage treated per day average.

Optimization and Zero-Based Management Review

- **Optimization**
  As part of the City's Optimization Program, MWWD has completed optimization studies and implemented best industry practices in the Environmental Monitoring & Technical Services, Operations & Maintenance and Wastewater Collection
  Divisions.

- **Environmental Monitoring and Technical Services (EM&TS)**
  On December 15, 1998, the EM&TS Division presented its assessment report to the Optimization Advisory Panel. The report provided background and operating information, benchmarking results, and an optimization plan, which summarized actions to be taken by EM&TS. The division was found to be competitive with environmental laboratories operating in the commercial market. The increase in reimbursable work over the past six years is a strong indicator of the entrepreneurial initiative of EM&TS. Reimbursable work has grown from $936,771 in Fiscal Year 1996 to a projected $1,950,000 in Fiscal Year 2002. Endorsements have been received from several of the division's client agencies testifying to the division's technical excellence and cost effectiveness.

The following relate to the Mayor's Goal #4, *Clean up our beaches and bays.*

- **Operations & Maintenance (O&M)**
  In June 1996, the O&M Division of MWWD entered into a scheduled two year competitive assessment. This optimization effort involved benchmarking against potential private sector service providers. The effort also involved City Council approval of a new and innovative Public Contract Operations agreement (termed "Bid-to-Goal). The agreement reduced projected budgets from Fiscal Year 1998 through Fiscal Year 2003 by 18 percent. This initiative incorporated recommendations of the Zero-Based Management Review and a number of other internally generated productivity improvements. The implementation of optimization measures included process streamlining, centralization of heavy maintenance and warehousing, a pay-for-performance program, and an enhanced management-labor partnership. This agreement completed its fourth successful year on June 30, 2001, and has accounted for over $65 million in savings to date. As recognition of the success of this creative labor-management collaboration, "Bid-to-Goal" was awarded the Program Excellence Award for Innovations in Local Government Management by the International City/County Management Association.

- **Wastewater Collection**
  In June 2001, Wastewater Collection Division completed a thorough two year assessment and benchmarking study, then entered into a six year Public Contract Operations agreement modeled on this successful O&M Division pilot. This agreement is designed to support the Mayor's Goal #4 by implementing best industry operations and maintenance practices in concert with an accelerated pipeline rehabilitation and replacement program.